OPD-E Series

User Manual

Warnings

- Avoid using the balance in any harsh environment.
- Only trained professionals are allowed to do repair work.
- Turn power off before connecting/disconnecting the power source.
- Avoid overloading or dropping material onto the platform as that could damage the balance.
- Do not spill liquids on the balance as that could damage the balance.
- Material that has a static charge could influence the performance of the balance.
- Electromagnetic interference can affect the reading of the balance.
- Unplug the power before cleaning and use a piece of soft cloth (do not use any aggressive cleaning agent); Make sure no liquid enters the balance.

OPD-E Series

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Overview

Thank you for using Optima scales for your important application. Here is the list of models this manual covers:

Model #	Max Weight (grams)	Accuracy (grams)
OPD-E104	120	0.0001
OPD-E204	210	0.0001

Contents

- Scale main unit
- Scale pan
- Scale pan support
- Draft ring
- Dust guard
- Spare fuse (0.5A)
- User Manual
- Cleaning cloth
- AC adapter

Preparation

1. Carefully remove contents from the package which may include fragile parts.
2. Carefully assemble the scale in the following sequence:
    1. Dust guard
    2. Draft ring
    3. Scale pan support
    4. Scale pan
3. Place the scale in a firm and flat surface, and avoid location where the scale maybe subject to vibration, sunlight, airflow, contact with water, and strong electromagnetic wave.
4. Level the scale by using the bubble level indicator (if available) and adjusting the feet of the scale.
5. Locate scale in the following condition:
    1. Temperature : 5°C ~ 40°C
    2. When relocating the scale, warm up the unplugged scale for 2 hours.
6. Plug in the scale to a surge protected power outlet.
7. Press the ON/OFF key in the front panel to turn the scale on and wait for it to finish initialization (i.e. when the display shows a weight of 0).
8. Let the scale warm up for 30 minutes before calibration and use.
9. Make sure any weight placed on the scale is not beyond the rated maximum.
10. If scale is not used for an extended period of time, disconnect all power.

Calibration

After all the preparation procedure has been performed (remember the scale needs to warm up for 30 minutes), follow the steps below for calibration:

- One-point calibration
  1. Press the SET key
  2. Press the PRINT key, the display should show Cx-y.
  3. Press the PRINT key to change the x value and the MODE key to change the value of y.
  4. Go to C1-y, and change the y value to 1 by pressing the MODE key.
  5. Press the TARE key, and "....." will be displayed.
  6. Press the SET key and then the PRINT key, "C1-1" will be displayed.
  7. Press CAL key, and the value of the internal weight will be displayed
  8. Press the MODE key to increase value and PRINT key to decrease value.
  9. Press the TARE key twice to save the value and exit.
  10. Press the TARE key, and 0 will be displayed.
  11. Press the CAL key and "CAL--0" followed by "CAL--F" will be displayed
  12. Put the calibration weight on the center of the pan, and close all the doors.
  13. Press the TARE key, and the calibration weight will be displayed after a blinking "--CAL--" is displayed.
  14. If the difference between the displayed value and the actual value of the external weight is more than +/- 1, calibration will need to be performed again.

Backlight Setup

When the balance is switched on, press [SET] key twice to switch on background light; if the light is on, then after pressing [SET] key twice the light will be off.

Weighing Units and Modes

When the balance is switched on, press [MODE] key repeatedly. This will change the weighing units 'G', 'Ct', 'Lb', 'Oz' and the weighing modes 'piece counting' and 'percentage weighing' in turn.

Parameter Setup

When the balance is switched on, press [SET] key, then press [PRINT] key, "Cx—y"will be displayed, x's values are 1-8, press [PRINT] key to view Cx's value; y is the value set by Cx, press [MODE] key to change the value of y, after the setting is done, press [TARE] key, ". . . . . "will be displayed it means that the user need to wait about 2 seconds, the balance will save and upgrade the setting and then it is ready to be used.

Parameters

Cx	Cx—y	Meaning	
C1 : Calibration mode	*C1—0	Auto-calibration with the build-in weight	
	C1—1	Manual calibration with external weight	
C2 : Set the basic number of samples for Piece counting	*C2—0	10	
	C2—1	20	
	C2—2	50	
	C2—3	100	
	C2—4	1000	
C3: "0" point minimum display value	C3—0	No "0" point tracking status	
	C3—1	1d	
	C3—2	2d	
	C3—3	3d	
	C3—4	4d	
	*C3—5	5d	
	C3—6	Not for user	
C4 : Serial band rate	*C4—0	2400bps	
	C4—1	1200bps	
	C4—2	4800bps	
	C4—3	9600bps	
*C5 : Data output mode	C5—0	On zero stable	
	C5—1	On stable	
	*C5—2	On command	
	C5—3	Continuous	
C6 : Key tone	*C6—0	No	(restart the balance by pressing ON/OFF key after setting)
	C6—1	Yes	
C7 : Anti-interference	C7—0		
	*C7—1	Weak	
	C7—2	Medium	
	C7—3	Strong	
C8 : With power screen will display	*C8—0	Yes	(restart the balance by re-plugging after setting)
	C8—1	No	

*is factory default setting

●On zero stable output: when 0.0000g is displayed, put object on the pan. After the value is stable, there will be a group of data transfer to external device.
●On stable output: after the data is stable, there will be a group of stable data transfer.
●On command output: [PRINT] key, command P＜CR＞ ＜LF＞ transferred through serial port, both of them can be considered as print order. After the balance receive command once, there will be a group of current weighing data transfer
●Continuous output: the balance transfers weighing data every 0.3 second

Command Control

After the balance receive a command, the command will be sent to the external device to inform that the balance will respond; if the command is wrong, "Err" will be sent to external device, which means that the balance has received an invalid command. The valid commands are as follows:
① O ＜CR＞ ＜LF＞: ON/OFF command is as the same as ON/OFF key on the balance（4F 0D 0A）;
②T ＜CR＞ ＜LF＞: TARE command is as the same as [TARE] key on the balance（54 0D 0A）;
③ C ＜CR＞ ＜LF＞: CAL command is as the same as [CAL] key on the balance〈43 0D 0A〉 ;
④ M ＜CR＞ ＜LF＞: MODE command is as the same as [MODE] key on the balance（4D 0D 0A）;
⑤ P ＜CR＞ ＜LF＞: PRINT command is as the same as [PRINT] key on the balance（50 0D 0A） ;

＜CR＞：ENTER（0D）
＜LF＞：LINEFEED（0A）

Basic Weighing

After the scale has been properly calibrated, the scale is now ready for use:

1. Wait for scale to be stable ("O" displayed) and press TARE key.
2. Place the object(s) of interest on the scale pan as close to the center as possible.
3. Read the value on the display when the reading is stable ("O" displayed).
4. Remember NOT to overload the scale since this may permanently damage the scale.

Tare

1. Make sure the scale is stabilized ("O" displayed").
2. Press the TARE key.

Counting Function

To perform counting function , follow the procedure below:

1. Press the SET key
2. Press the PRINT key to change the x value and the MODE key to change the value of y.
3. Go to C2-y, and change the y value to the desired value (reference number of samples) by pressing the MODE key.
4. Press the TARE key, and "....." will be displayed.
5. Press the TARE key, and 0 will be displayed after the scale is stable ("O" displayed).
6. Press the MODE key to change the balance to piece counting mode.
7. Put the object(s) on the center of the pan, and close all the doors.
8. Press the CAL key, and the balance will display the number of sample.
9. Remove the sample and wait for the stable "O" display.
10. Piece counting can now performed again.

NOTE: The sample value should not be less than the readability value.

Percentage Weighing

To calculate the percentage a weight varies from a reference:

1. Press the TARE key, and 0 should be displayed after balance is stable ("O").
2. Press the MODE key to change the scale into Percentage Weighing mode.
3. Place the reference object on the pan and close all the doors. When the reading is stable ("O"), press the CAL key, and the scale should now take this sample as the reference (100% displayed).
4. Remove the reference object and the scale should read 0.
5. Place the goal object on the pan and wait for it to stabilize ("O" displayed). The display should show the percent deviation from the reference.

RS232 Communication

Transmission Form

asynchronous transmission
Baud rate: 1200, 2400, 4800, 9600
Start bit: 1
Stop bit: 1
Data bit: 8
Parity: none

Data Output Mode

See parameter C5 (PARAMETERS section)

Data Output Format

FXXXX.XXXXKKK < CR > < LF >
F：sign bit "+" or "-"
X：0—9 weighing data
.：decimal point
K：reservation three sign of weighing unit, right align, if there is not three sign space will fill in the room
< CR > ：ENTER
< LF > ：LINEFEED
For example, if the value is +10.0000g, after the transmission it will be +0010.0000 g<CR><LF>

Stable Output or Instable Output

When the output is unstable, KKK will be sent; When the output is stable, there will be information sent.

Connection of Balance and External Device

balance 9 pins	computer 9 pins	balance 9 pins	series interface printer 25 pins
2	2	2	2
3	3	3	3
5	5	5	7

NOTE: the length of data line should not be more than 15 meters.

Troubleshooting

Q: The scale is not showing an accurate reading.
A: Make sure the scale is placed on a firm and flat surface and that there are no external interference. Please revisit the "Preparation" section of this manual. Also, please make sure the calibration procedure has been performed correctly. It won't hurt to run through the calibration process again when in doubt!!!!

Q: The scale does not turn on.
A: Make sure the power cord is plugged in, and that there is power. One easy way to test this is by connecting another appliance to the same outlet and see if it's operational.

Technical Support

Please email support@optimascale.com if you have any further questions.